

UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Peter FLOHR et al.

Application No.: **10/623,812**

Filing Date: 22 July 2003

For: BURNER AND PILOT BURNER

Art Unit: 3749

Examiner: Gravini, Stephen Michael

Attorney Ref. No.: 003-068

BRIEF FOR APPELLANT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450 .

Sir:

COMES NOW APPELLANT to present this Brief in support of the appeal of the final rejections of Claims 1-9 in the above-captioned patent application. The Notice of Appeal having been timely filed on 22 June 2005, with a Petition for a one-month extension of time, this Brief is due to be filed on 22 August 2005, with a Petition for a two-month extension of time. 37 C.F.R. § 41.37 (a)(1), (e).

It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. If, however, additional extensions of time are necessary to prevent abandonment of this application or dismissal of this appeal, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and the Commissioner is hereby authorized to charge fees necessitated by this paper, and to credit all refunds and overpayments, to Deposit Account 50-2821.

For the following reasons, Appellant respectfully submits that the final rejection of each of Claims 1-9 in this application is in error, and therefore respectfully requests reversal of the rejections.

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I. REAL PARTY IN INTEREST

The real party in interest is ALSTOM Technology LTD, a corporation of Switzerland.

II. RELATED APPEALS AND INTERFERENCES

There are no appeals or interferences related to this appeal.

III. STATUS OF CLAIMS

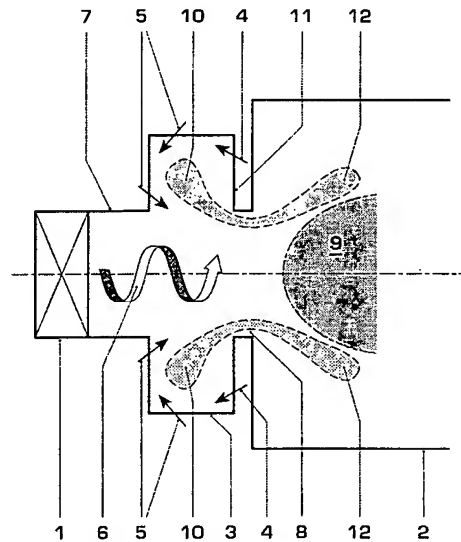
Claims 1-9 stand finally rejected in the Office Action dated 24 January 2004, as confirmed in the Advisory Action dated 16 June 2005, the rejections of which are the subject of this appeal.

IV. STATUS OF AMENDMENTS

The Amendment and Response under 37 C.F.R. §§ 1.111, 1.116, filed 20 May 2005, has not been entered; all other amendments, including the Amendment and Response under 37 C.F.R. § 1.111, filed 6 December 2004, have been entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present application describes burners [page 2, lines 28-31] as generally illustrated in the single drawing figure, reproduced herein to better assist in an appreciation of the present invention. A burner includes a swirl generator 1, a mixing section 7, and a combustion chamber 2 [page 5, lines 27-29]. Means for injecting fuel for producing a main flow are provided generally in the area of the swirl generator 1 [page 5, lines 29-33]. Exemplary burners which embody principles of the present invention include a cavity 3 between the swirl generator 1 and the combustion chamber 2, which cavity 3 advantageously can be an annular toroidal cavity [page 6, lines 7-11]. In such an exemplary burner, a main stream 6 of fuel and air flows from the swirl generator 1 via mixing section 7 into the combustion chamber 2 [page 5, lines 29-33; page 6, lines 15-17]. The cavity 3 is arranged in such a way that a secondary flow 10 can be formed therein, and this secondary flow 10 encloses the main flow 6 and stabilizes the inner backflow zone 9 with a secondary backflow zone 12 [page 6, lines 15-17; page 7, lines 4-15].



VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The grounds of rejection to be reviewed in this appeal are:

The rejection of Claims 1-5 and 7-9 under 35 U.S.C. § 102(b) over U.S. Patent No. 6,126,439, issued to Knöpfel et al.

The rejection of Claim 6 under 35 U.S.C. § 103(a) over *Knöpfel* in view of the disclosure of U.S. Patent No. 6,056,538, issued to Büchner et al. (“Büchner”).

Appellant separately argues the patentability of Claims 2 and 8 from that of Claims 1, 3-5, 7, and 9.

VI. ARGUMENTS

A. Introduction

In the Office Action dated 24 January 2005 (“Final Office Action”), beginning at page 2, Claims 1-5 and 7-9 were rejected under 35 U.S.C. § 102(b), as reciting subject matters that allegedly are anticipated by U.S. Patent No. 6,126,439, issued to Knöpfel et al. (“Knöpfel”).

Beginning at the bottom of page 2 of the Final Office Action, Claim 6 was rejected under 35 U.S.C. § 103(a), as reciting subject matter that allegedly is obvious, and therefore allegedly is unpatentable, over *Knöpfel* in view of the disclosure of U.S. Patent No. 6,056,538, issued to Büchner et al. (“Büchner”).

For at least the following reasons, all of these rejections are in error and should be reversed.

B. Legal Standards

Claim construction begins with the words of the claims. *Karlin Tech., Inc. v. Surgical Dynamics, Inc.*, 177 F.3d 968, 971 (Fed. Cir. 1999). Claim language should be interpreted as one reasonably skilled in the art would have interpreted the claim at the time of the patent application date. *Vivid Techs., Inc. v. American Science & Engineering, Inc.*, 200 F.3d 795, 804 (Fed. Cir. 1999); *Wiener v. NEC Elec., Inc.*, 102 F.3d 534, 539 (Fed. Cir. 1996). Where the claim term has no specialized meaning to persons of skill in the art, the ordinary meaning of the words to those of ordinary skill in the art controls, unless the evidence indicates that the inventor used them differently. *Karlin*, 177 F.3d at 971. Such evidence includes the specification and prosecution history, both of which must be analyzed to determine if the inventor limited or redefined any of those terms. *Watts v. XL Sys., Inc.*, 232 F.3d 877, 882-84 (Fed. Cir. 2000);

Vivid Techs., 200 F.3d at 804. If claim language is not clear on its face, then intrinsic evidence also should be consulted to resolve the lack of clarity. *Interactive Gift Express, Inc. v. Compuserve, Inc.*, 256 F.3d 1323, 1331 (Fed. Cir. 2001).

Under the doctrine of anticipation, a patent claim is not patentable if the claimed invention lacks novelty. 35 U.S.C. § 102(b); *Karsten Mfg. Comp v. Cleveland Golf*, 242 F.3d 1376, 1383 (Fed. Cir. 2001). Anticipation, a question of fact, focuses on a comparison of the prior art to the subject matter of the claim at issue. *Celeritas Technologies, Ltd. v. Rockwell International Corp.* 150 F.3d 1354, 1361 (Fed. Cir. 1998). “[A] claim is anticipated if each and every limitation is found either expressly or inherently in a single prior art reference.” *Celeritas*, 150 F.3d at 1361. A convenient way to consider anticipation is the “four corners” doctrine. The “four corners” doctrine refers to the idea that anticipation requires that each and every limitation of the claimed invention is described either expressly or inherently within the four corners of a single prior art document. *Advanced Display Systems, Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000). Another requirement for anticipation is that the prior art be enabling to one of ordinary skill in the art. *See, generally, Bristol Meyers-Squibb Co. v. Ben Venue Labs., Inc.*, 246 F.3d 1368 (Fed. Cir. 2001).

A claimed invention is unpatentable due to obviousness if the differences between it and the prior art “are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.” 35 U.S.C. § 103(a) (2000). Obviousness “is a legal conclusion based on underlying findings of fact.” *In re Thrift*, 298 F.3d 1357, 1363 (Fed. Cir. 2002) (*quoting In re Kotzab*, 217 F.3d 1365, 1369 (Fed. Cir. 2000)). While the ultimate conclusion of obviousness is decided as a matter of law, several factual inquiries underlie this determination. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). These inquiries include: the scope and content of the prior art; the level of ordinary skill in the field of the invention; the differences between the claimed invention and the prior art; and any objective evidence of nonobviousness, such as long-felt need and commercial success. *Id.* When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references. *In re Geiger*, 815 F.2d 686, 688 (Fed. Cir.

1987). Although the suggestion to combine references may flow from the nature of the problem, *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996), the suggestion more often comes from the teachings of the pertinent references, *In re Sernaker*, 702 F.2d 989, 994 (Fed. Cir. 1983), or from the ordinary knowledge of those skilled in the art that certain references are of special importance in a particular field, *Pro-Mold*, 75 F.3d at 1573 (citing *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 297 n.24 (Fed. Cir. 1985)). Therefore, “[w]hen determining the patentability of a claimed invention which combines two known elements, ‘the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination.’” *In re Beattie*, 974 F.2d 1309, 1311-12 (Fed. Cir. 1992) (quoting *Lindemann Maschinenfabrik GMBH v. Am. Hoist & Derrick Co.*, 730 F.2d 1452, 1462 (Fed. Cir. 1984)).

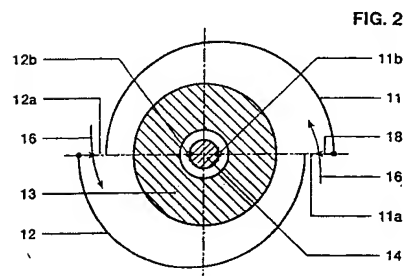
C. *The rejections of Claims 1, 3-5, 7, and 9 under 35 U.S.C. § 102(b) are in error*

Claim 1 relates to a burner having a combination of elements including, *inter alia*, a swirl generator for a combustion-air flow and means for injecting fuel for producing a main flow, a combustion chamber arranged downstream of the swirl generator, and a cavity arranged between the swirl generator and the combustion chamber, in which cavity a secondary flow can be produced that encloses the main flow.

Claim 7 relates to a pilot burner having a combination of elements including, *inter alia*, a cavity arranged between a swirl generator and a combustion chamber and in which a secondary flow can be produced.

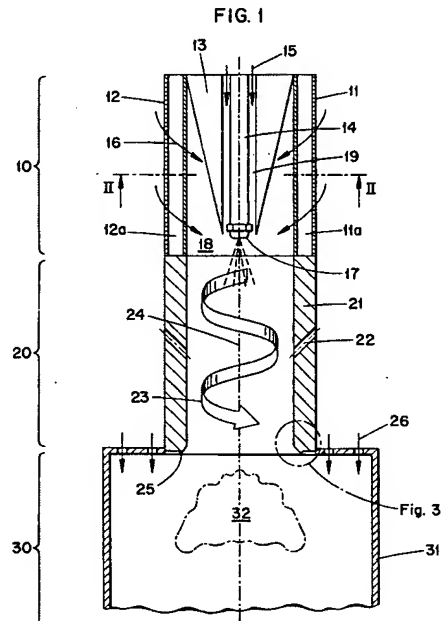
The prior art, including *Knöpfel*, fails to identically disclose or describe combinations as recited in the pending claims.

The burner according to *Knöpfel*, see Figs. 1 and 2 (reproduced herein to better assist in understanding *Knöpfel*'s disclosure), is based on the same generic burner as described above, namely: a swirl generator 10, a mixing section 20, and a combustion chamber 30. The main stream of fuel and air 23 flows from the swirl generator 10 via the mixing section 20 into the combustion chamber 30. Fig. 2, a transverse cross-sectional illustration through the swirl generator 10, shows a typical double-cone swirl generator configuration, similar to that described in the present specification (see page 1), and not a cavity between a swirl generator and a combustion chamber as alleged in the Final Office Action. *Knöpfel* describes a fuel nozzle 17 located in the swirl generator 10, and air throughflow openings 22 in the mixing tube 20 to inhibit flashback in the mixing tube. See col. 4, lines 53-63. Whatever other useful structures *Knöpfel* may describe, *Knöpfel* fails to describe a cavity for forming a secondary flow, enclosing the main flow from the swirl generator, as recited in the combination of Claims 1 and 7 *et seq.*



toroidal shape, as shown in figure 2, injection means 17, and mixing section arrangements (column 3 line 29).”

On the contrary, however, *Knöpfel* describes only the swirl generator 10. Nowhere in the passages indicated in the Office Action, much less the rest of *Knöpfel*, are described structures as



recited in the pending claims, including a cavity between a swirl generator and a combustion chamber in which a secondary flow can be formed which encloses a main flow. The additional reference in the Office Action to col. 3, line 29, adds nothing, as this passage in *Knöpfel* merely generally defines the swirl generator 10, the mixing section 20, and the combustion chamber 30. Mixing section 20 of *Knöpfel* is clearly a tube; from Fig.1 and col.4, lines 40-42, of *Knöpfel*:

which mixing section (20) is attached on the downstream side of the swirl generator and essentially comprises a mixing tube (21)

Knöpfel clearly fails to describe structures recited in Claims 1 and 7 *et seq.* As discussed above, *Knöpfel* describes only a centrally arranged fuel nozzle 17.

In a “Response to Arguments” section of the Final Office Action, appearing at page 3 thereof, the patent examiner further demonstrates a lack of appreciation of the claimed subject matter, stating:

Applicants argue that the claimed invention is distinguished from primary reference *Knöpfel* because that reference fails to describe a cavity for forming a secondary flow, enclosing the main flow from the swirl generator and that reference fails to describe an annular torroidal [sic] shape. Those features are considered statements of intended use, such that the structure of the primary reference is capable of a secondary flow that can be produced and torroidal [sic] shape immediately adjacent the cavity as shown in figure 2 and disclosed in column 3 lines 25-37.

However, Claims 1 and 7 plainly recite, in their combinations, that a “cavity is arranged between the swirl generator and the combustion chamber . . .”, and in which cavity a secondary flow can be produced that encloses the main flow, both of which are positive structural recitations in the claim and not intended uses of other positively described structures. Thus, the patent examiner plainly has misapprehended the scope of the claims, and has therefore ignored at least two elements recited in the claims.

Accordingly, the Office Action fails to make out a *prima facie* case that *Knöpfel* describes a device including each and every element recited in the combinations of Claims 1, 3-5, 7, and 9. *Knöpfel* therefore cannot anticipate the subject matters of these claims.

For at least the foregoing reasons, Appellant respectfully submits that the subject matters of Claims 1, 3-5, 7, and 9 are not anticipated by *Knöpfel*, are therefore not unpatentable under 35 U.S.C. § 102.

D. The rejections of Claims 2 and 8 under 35 U.S.C. § 102(b) are in error

Claim 2 relates to a burner as recited in Claim 1, in which the cavity has an annular toroidal shape. Claim 8 relates to a pilot burner as recited in Claim 7, in which the cavity has an annular toroidal shape. In addition to the reasons presented above concerning the patentability of the subject matters of Claims 1 and 7 over *Knöpfel*, Claims 2 and 8 are further patentable over *Knöpfel* for additional reasons.

As reproduced above, the Final Office Action alleges that the offset double-cone configuration of *Knöpfel*'s swirl generator 10 is read on by the 'annular toroidal cavity' recited in the combinations of Claims 2 and 8. Nowhere does the Final Office Action allege, and indeed *Knöpfel*'s disclosure would not support such an allegation, that any annular toroidal cavity that may be described by *Knöpfel* is positioned "between the swirl generator and the combustion chamber" as recited in Claims 2 and 8. Rather, the structures or spaces alleged in the Office Action to correspond to the claimed annular toroidal cavity are part of *Knöpfel*'s swirl generator 10, which is upstream of the combustion chamber, and therefore cannot be "between the swirl generator and the combustion chamber". The Office Action has not identified any other structure or space described in *Knöpfel* that can be read on by the claimed combinations' cavity.

Knöpfel is entirely silent about any structure being "toroidal". Appellant has not in this application imposed a definition of those terms such that a "tube" such as *Knöpfel*'s mixing section 20 could be considered to be "annular" or "toroidal".

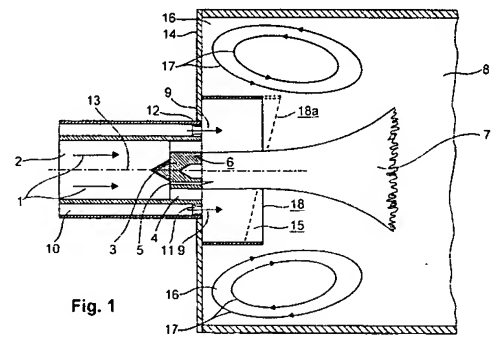
Therefore, assuming *arguendo* that the subject matter of Claims 1 and 7 are not patentable to Appellant, the subject matters further defined in Claims 2 and 8 are nevertheless

patentable. None of the prior art, including *Knöpfel*, discloses or describes an annular, toroidal cavity arranged between a swirl generator and a combustion chamber, in which cavity a secondary flow can be produced that encloses the main flow, in the combinations of Claims 2 and 8.

For at least the foregoing additional reasons, the subject matters of Claims 2 and 8 are not identically disclosed or described in *Knöpfel*.

E. The rejection of Claim 6 under 35 U.S.C. § 103(a) is in error

Claim 6 relates to a burner as recited in the combination of Claim 1, in which the secondary flow is configured and arranged to be used as a pilot flame. As discussed above, *Knöpfel* fails to anticipate the subject matter of Claims 1-5 and 7-9. Claim 6 depends from independent Claim 1, and is allowable for at least the same reasons. Furthermore, *Büchner* fails to make up for the deficiencies of *Knöpfel* with respect to the subject matters of Claims 1 and 6.



Büchner discloses a burner (unlabeled) with a pilot flame device; Fig. 1 of *Büchner* is reproduced herein to assist in a better understanding of *Büchner*'s disclosure. *Büchner*'s pilot flame is formed by a portion of a premixed fuel gas/air mixture 1 passing from the burner pipe 1, through drill holes 5 formed in the swirl generator 3, and into the flame 7. The pilot flame is not formed by a secondary flow from a cavity between a swirl generator and a combustion chamber, but is instead formed in the swirl generator by a partial stream of the main flow of fuel and air. Thus, *Büchner* teaches away from the subject matters of the pending claims, and fails to make up for the deficiencies of *Knöpfel* with respect to the subject matters of the pending claims. Stated somewhat differently, assuming *arguendo* that the hypothetical combination of *Knöpfel* with *Büchner* was not made with the benefit of an impermissible hindsight reconstruction of the claimed subject matter from Appellant's own specification, the resulting construct would still not include each and every element recited in the combinations of the pending claims, because

neither *Knöpfel* or *Büchner* describes, discloses, or suggests the differences between the subject matters recited in Claims 1 and 6 and their hypothetical combination.

For at least the foregoing reasons, Appellant respectfully submits that the subject matter of Claim 6, taken as a whole, would not have been obvious to one of ordinary skill in the art at the time of Appellant's invention, and is therefore not unpatentable under 35 U.S.C. § 103(a).

F. Claims 1-9 are patentable

For at least the reasons presented herein, each of the subject matters of Claims 1-9, taken as a whole, is patentable over *Knöpfel* and *Büchner*. Accordingly, the rejection of each of Claims 1-9 under section 102(b) or 103(a) is reversible error.

IX. CONCLUSION

For at least the foregoing reasons, Appellant respectfully submits that the final rejections of the claims in this patent application are in error, and therefore respectfully requests reversal thereof.

Respectfully submitted,

Peter Flohr et al.

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703.652.5101 (f)

Date: 29 Sept. 2005

CLAIMS APPENDIX

1. A burner for a heat generator, comprising:
a swirl generator for a combustion-air flow and means for injecting fuel for producing a main flow;
a combustion chamber arranged downstream of the swirl generator; and
a cavity arranged between the swirl generator and the combustion chamber, in which cavity a secondary flow can be produced that encloses the main flow.
2. The burner as claimed in claim 1, wherein the cavity has an annular toroidal shape.
3. The burner as claimed in claim 1, further comprising injection means for fuel and for combustion air arranged in the cavity.
4. The burner as claimed in claim 1, further comprising a mixing section arranged between the swirl generator and the cavity.
5. The burner as claimed in Claim 1, further comprising a mixing section arranged between the cavity and the combustion chamber.
6. The burner as claimed in Claim 1, wherein the secondary flow is configured and arranged to be used as a pilot flame.
7. A pilot burner for the burner of a heat generator, the burner having a swirl generator for a combustion-air flow and means for injecting fuel for producing a main flow, and a combustion chamber being arranged downstream of the burner, the pilot burner comprising:
a cavity arranged between the swirl generator and the combustion chamber and in which a secondary flow can be produced.

8. The pilot burner as claimed in claim 7, wherein the cavity has an annular toroidal shape.
9. The pilot burner as claimed in claim 7, further comprising injection means for fuel and for combustion air arranged in the cavity.

EVIDENCE APPENDIX

No additional evidence is cited in this Brief.

RELATED PROCEEDINGS APPENDIX

There are no proceedings related to this appeal.